# The PHENIX Muon Identifier Local Level-1 Trigger System

John Lajoie for the PHENIX Collaboration

*Iowa State University*

*Presented by:* John Lajoie

**Abstract**

The PHENIX detector at the Relativistic Heavy Ion Collider (RHIC) will study the dynamics of ultra-relativistic heavy ion collisions and search for exotic states of matter, most notably the Quark Gluon Plasma (QGP). Substantial event selectivity is needed at RHIC to enhance interesting events relative to more common ones and to satisfy the requirements of the data acquisition system. The Level-1 Trigger is a beam-clock parallel-pipeline system that uses six Local Level-1 (LL1) algorithms pertaining to the six fastest PHENIX subdetectors. For the year two run at RHIC we will install, comission and operate the Muon Identifier Local Level-1 system that will allow event selection based on penetrating tracks in the PHENIX Muon Identifier (MuID) panels. This trigger will be a critical component of both the PHENIX heavy-ion and polarized proton physics programs. I will describe the dynamic road-finding algorithm that will be used to idenify tracks penetrating to different layers in the MuID and its hardware implementation.

*Preprint submitted to Elsevier Preprint* *20 December 2000*